

APRIL, 1908

Issued Every Month

for Free Distribution to all Users
of Machine Tools

HITCHCOCK'S MACHINE TOOL LIST

A Reference Book for Engineers
of Iron Working Machinery

Published by
A. H. HITCHCOCK

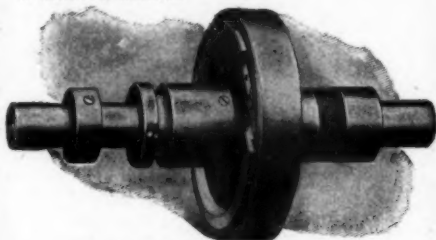
Chicago

The Nugent Clutch

In spite of general dullness in the metal working industry during the past Winter, which now, happily, is passing away, the **Nugent Clutch** has made steady progress.

Many who tried out other clutches that failed to make good, have found just what they wanted when they installed the **Nugent**.

Within six months



THE NUGENT CLUTCH

has been tested and adopted, and is in daily use for the following purposes, among many others:

Hoists—Gas Engines—Concrete Mixers—Multiple Drills—Baking Machinery—Stave-Making Machines—Cash Register Factory—Cut-Off Coupling to Water Wheel—Heavy Rope Drive in Metallurgical Works—In Machine Shops for Line and Countershaft Work.

Those who have begun with the **Nugent Clutch** have not had to fool around experimenting with others.

It does the work!

—WRITE TO—

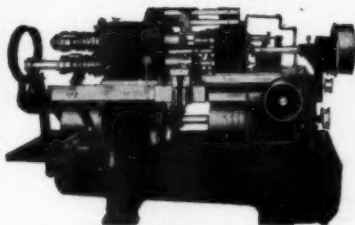
THE CINCINNATI IRON & STEEL CO.

CINCINNATI, : : : OHIO

FOR PRICE LIST NO. 3



— NAMCO —



ACCURACY

*Accuracy of a degree which is
unsurpassed by automatic
methods is a feature of
Duplicate Parts*

— MADE ON —

**THE ACME AUTOMATIC
MULTIPLE SPINDLE
SCREW MACHINE**

The National-Acme Mfg. Co.

CLEVELAND, O.

New York Boston Chicago Atlanta

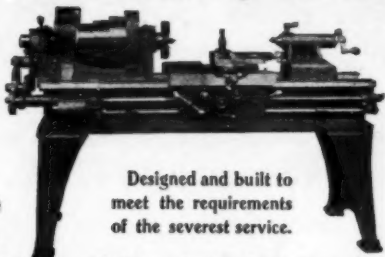


— NAMCO —



A Manufacturing Lathe

**3-Step
Cone,
Double
Back
Gears,
18
Spindle
Speeds**



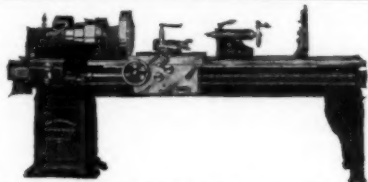
**Designed and built to
meet the requirements
of the severest service.**

It has eight more spindle speeds than the usual five-step cone, and at least double the power. Positive geared feeds for every possible need; changes instantly made. Its success as a cost reducer makes it especially interesting to those who study close economy.

Three sizes—14, 16 and 18 inch

**The Springfield Machine Tool Co.
633 Southern Ave., Springfield, Ohio**

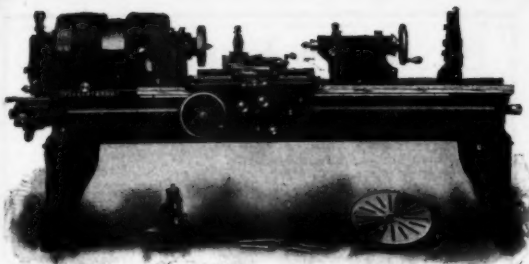
THE 16 INCH CINCINNATI Quick Change Gear Lathes



embody certain up-to-date features to handle your work with **economy, rapidity and accuracy**. **Ex-acting users** everywhere say this.

WANT MORE DETAILS?

**THE CINCINNATI LATHE & TOOL CO.
CINCINNATI, OHIO, U. S. A.**



THE MANY LATHE FEATURES OF

The Patent Head Lathe

GIVE IT AN INDIVIDUALITY OF ITS OWN

We do not know for what class of work you expect to get that new lathe, but we do know the Patent Head Lathe, and can show you where it will be a money maker for you. We call your attention to some features that have made possible **more lathe work with fewer lathes.**

Accuracy: Plain surfaces, requiring fitting, are scraped to surface plates, and spindles, important studs and all revolving parts are fitted by grinding. Every gear on the lathe is cut with its individual cutter. All belt pull taken from the spindles.

Convenience: Eighteen speeds in geometrical progression; thirty-two feeds; thirty-two threads with no gears to change; length and cross feeds, with reverse at apron; impossible to engage feeds and lock nuts at the same time. Double back gears, giving power and proper surface speed on work of all diameters. Six of the eighteen speed changes made through shifter; spindle and back bearings automatically lubricated, requiring attention but once a month.

Strength: Great depth and rigidity of internally braced lathe bed. Ledge (steel strip shown at front of bed) supporting rack pinion in apron. Massive spindle bearings of great length and rigidity. Broad faced headstock gearing for driving heavy cuts at slow speeds. All steel feed gearing.

Power: Large diameter driving pulley, carrying a broad belt that gives from two to three times more power per revolution than any cone type lathe of the same swing can deliver.

14 inch to 48 inch swing.

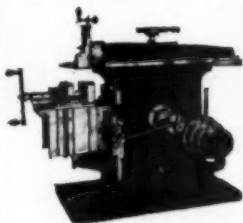
Our Catalogue "S" tells the whole story

THE LODGE & SHIPLEY MACHINE TOOL CO.
CINCINNATI, O., U. S. A.

Shaper Economy

Demands Power, Simplicity, Effectiveness

The economical shaper is one with which the average machinist can produce the largest results day in and day out



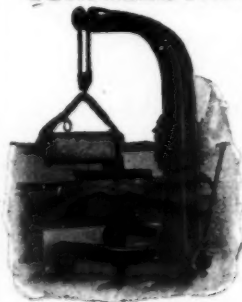
It is in precisely this respect that the Kelly Back-Geared Shaper excels; and it excels because it has the strength to withstand the strain of heavy duty, the power to take exceptionally deep cuts, combined with a convenience of adjustment that conserves the operator's time and effort. If you measure the value of a shaper by its ability to turn out work—in a word, to save money—you cannot fail to be interested in

what we can tell you about the Kelly.

SUPPOSE YOU LET US SHOW YOU

The R. A. KELLY CO., 200 to 800 Market St., Xenia, O.

THE HANDIEST TOOL IN THE SHOP PORTABLE CRANE AND HOIST

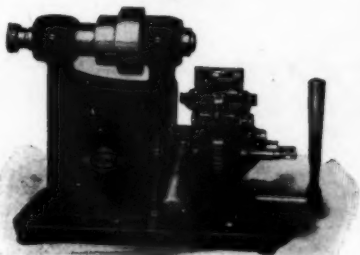


One man can move it anywhere. When he gets it there he can lift anything within its capacity without assistance, and can then move both hoist and load easily and quickly. It will save enough labor and time in an ordinary machine shop to pay for itself in a month. In fact, it is doing so right now in hundreds of shops and factories. Once used you wouldn't think of trying to do without it.

**Made in four sizes, lifting
3,000 to 6,000 pounds**

*How would you like to try
one at our risk?*

The Canton Foundry & Machine Co., Canton, Ohio



BENCH MILLER

**If its a Question of
Accuracy, the "Chicago"
Will Answer It**

**"Usual equipment includes draw bar,
collet and sleeve, quick-acting or screw
vise and two-speed self-oiling c. s."**

With power feed if wanted

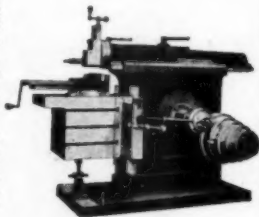
**Chicago Machine Tool Co.
12 S. Canal St., Chicago, Ill.**

Quality of Workmanship CONTROLS THE LIFE OF ANY MACHINE

This is especially true in a shaper, on account of the number and length of bearings, and this is where

STEPTOE SHAPERS

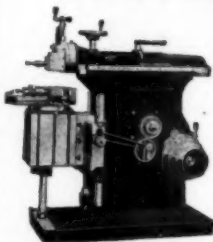
excel. We compel the utmost care in scraping of these bearings, and consequently we get the best results, thus producing a smooth running machine with a long life.



—ADDRESS—

THE JOHN STEPTOE SHAPER CO.
Station B, Cincinnati, Ohio

When You Buy a Shaper YOU BUY SHAPER RESULTS



No. 1610—16 in. Back Geared
Crank Shaper.

If you bought it just because it was a shaper, then any old shaper would do; but **you buy it only for the work it will accomplish.** Judged by the standard of practical results, the entire line of

"Cincinnati" Shapers

are more productive for each dollar of cost than any other such tools made. If this is really true, then you want "Cincinnati" Shapers first, last and all the time.

Ask us how we make good. Then it's up to us.

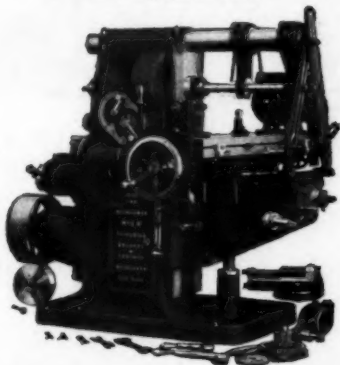
THE CINCINNATI SHAPER CO.
Colerain Ave. & Elam St., CINCINNATI, O.

THE REASON WHY IN MILLING

WHAT IS IT THAT MAKES

The "Milwaukee" Miller

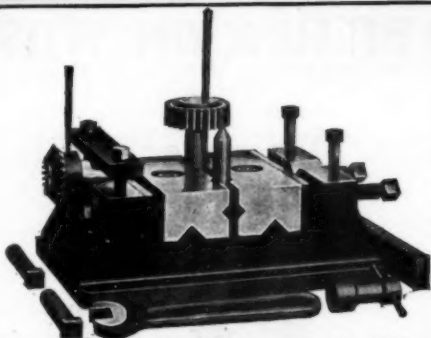
a better tool, both for manufacturing purposes
and for general work?



A minute or two saved in adjusting the machine or the work; several minutes saved in making a certain cut—these are items which mean hundreds, perhaps thousands, of dollars in a year's business—enough to pay a large return on the cost of changing an ordinary miller for a better one. We would like to show you where and how we can effect this economy for you—in a word, the reason why the **Milwaukee Miller** can save you these minutes, hours and days of expensive time.

Why not give us the opportunity?

Hearney & Trecker Co.
318 Reed Street, MILWAUKEE, WIS.



The Cincinnati Drill Vise **MADE IN THREE SIZES**

Well worth your investigation

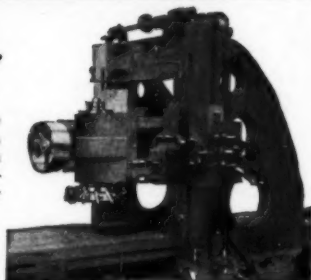
CINCINNATI MACHINE TOOL CO.
Township and Valley Streets, • CINCINNATI, OHIO

Milling on the Planer

THE FARWELL MILLER

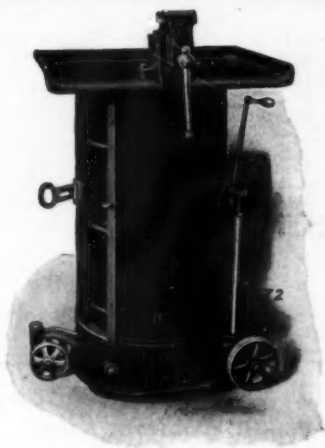
can be attached to
any planer and can
be operated with
vertical, horizon-
tal or angular
spindle. 4 sizes.

—
Catalog 56



The Adams Company,
Dubuque, Iowa

A PORTABLE VISE STAND

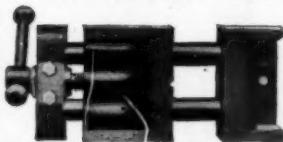


HERE'S a new item that is needed in every machine shop, round house, garage or repair shop—a conveniently portable work bench. It is very sturdy, so as to stand against heavy chipping or filing, and has a cabinet for the safe keeping of tools. It's just the thing where you want a vise right on the job.

**We have a new descriptive
Circular ready for mailing**

THE NEW BRITAIN MACHINE CO.
60 Chestnut St., NEW BRITAIN, CONN.

NO FANCY FRILLS IN
The Titus Drill Press Vise
It is Simple, Practical, Reliable



There are vises and vises, some of them with so many loose parts and attachments that a man almost needs a diagram and printed directions to keep them together. The Titus has none.

It's all there all the time, and ready for service the moment you put your hand on it. Yet it has every valuable feature—square base and edges, so that it will drill at exact right angles; V groove for holding round pieces either way; hardened guide rods, which drill cannot harm; no lodging places for oil and chips.

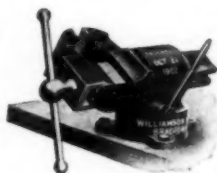
We are glad to have you order one on a month's trial, because we know if you use it long enough to learn its convenience and its merit as a time saver, you won't care to let it go.

Will you send shipping directions?

TITUS MACHINE WORKS
MARION, OHIO

A Man Can Do More Work
WHEN HE CAN DO IT EASILY

Hence the economy of giving him the
Williamson Double Swivel Vise



As the work, once clamped in the vise, turns in two complete circles, horizontal and vertical, and is instantly locked at any point in either, it is plain that the puttering a man ordinarily has to do to get his job in the right position is eliminated, and the time so wasted is spent on the work itself. A man simply can't help doing more with a Williamson vise, because it

keeps him on the job every minute. And it is the minutes that count in the cost of his output.

A small investment, but a big economizer.

WILLIAMSON VISE CO., :: Bradford, Pa.
 Special bases for use on planers, shapers, drill presses, millers, etc.



Economical Machining

How the F. N. Gardner Disc Grinder Does It

The No. 14 Double Head Disc Grinder shown finishing drop forgings of unannealed tool steel, with the scale on, which are too hard to mill and difficult to plane on that account. Finished surface on each piece about 4 square inches. Ground at the rate of **sixty an hour**; previously finished on a shaper at the rate of **less than six an hour**.

Do You Care to Save 25 to 90 Per Cent in the Cost of Finishing Small Flat Surfaces?

If so, send us samples of such work, and let us tell you without expense just what the cost is by our machine and methods. Compare it with what you are paying to get the same results now, and you will see just how fast our disc grinder would earn money for you.

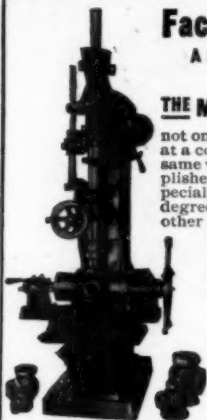
THE F. N. GARDNER DISC GRINDER

produces exceptional results, because it is an exceptional machine; because it has the stability and belt power required for heavy work, together with the accuracy and convenience of manipulation essential to speed and economy. As the result of nearly twenty years' study and experience in this field, our Mr. Gardner has succeeded in designing a disc grinder that is a real machine tool, whose economic possibilities manufacturers are only beginning to realize.

Don't wait; inform yourself now

GARDNER MACHINE CO., Beloit, Wis.

The Disc Grinding Authorities



Faces, Reams and Taps

A 3 Inch Valve with 3 Openings

FOR SIX CENTS

THE MURCHEY TAPPING MACHINE

not only does this at one operation, and at a cost less than one-tenth that of the same work done on a lathe, but it accomplishes this result without requiring especially skilled attendance, and with a degree of accuracy hard to equal by any other method. An ordinary day's work for this tool is 150 such valves, which makes it equal in capacity to about a dozen lathes. The saving in labor, in investment and in power, exceeds ninety per cent.

Wasting ninety cents everytime you spend a dollar is too swift a pace.

Better let us stop that loss

MURCHEY MACHINE CO.

53 Porter St., Detroit, Mich.

Machine Tool Makers

should investigate carefully the facilities offered by **Hitchcock's Machine Tool List** for reaching this trade in all parts of the country. Its circulation is specialized to completely cover *every line of manufacture* in which machine tools are used—as well as all railroad and other tool-using shops—with a thoroughness and effectiveness not equalled by any other advertising medium.

FIT THE TOOL TO THE SERVICE REQUIRED

and you get the greatest economy of cost and the largest output.

DWIGHT SLATE DRILLS

meet the demands of present day requirements, for the following reasons:

First: Construction will bear the most rigid inspection both as to quality of material and workmanship.

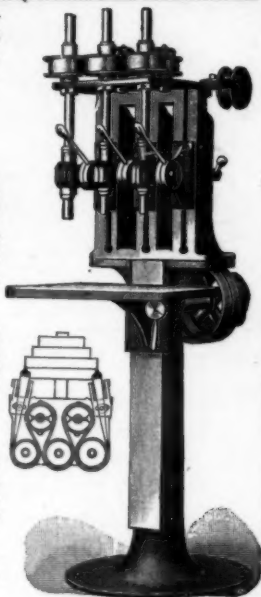
Second: Twenty-five years' actual use in the largest shops in the country is a guarantee of its efficiency and durability.

Third: Moderate in price.

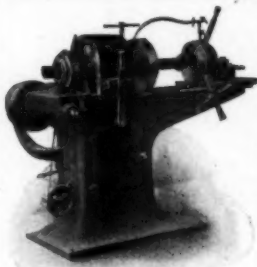
We also manufacture Automatic Gear Cutters with capacity for cutting spur, bevel and crown gears, ranging from $\frac{1}{8}$ inch to 8 inch diameter, $4\frac{1}{2}$ inch face, 12 pitch and finer.

It is worth while to know what we can do for you

THE DWIGHT SLATE MACHINE CO.
HARTFORD, CONN., U. S. A.



An Evolution in Pipe Machinery



No. 1, Cutting $\frac{1}{4}$ to 3 Inches.
All sizes, $\frac{1}{4}$ to 12 in.

Our first threading and cutting machines were good—for that period. As shop requirements became more severe, our tools have been constantly improved to keep right up in the lead.

Result: Up-to-date pipe machines that have been thoroughly tested at every step.

These tools cut right or left-hand threads, have self-opening, adjustable dies, and six changes of speed without removing or changing a gear.

Tell us what size you need and see what we can do for you.

WILLIAMS TOOL CO. . . Erie, Pa.

What Will This Machine DO?



That's the question every prospective purchaser of a pipe threading and cutting machine asks—what will the machine actually do?

Will it cut and thread iron and steel pipe equally well; will it work smoothly, silently, swiftly—and **always** work; will it work economically—and absolutely accurately; is it difficult or easy to operate?

When we say that **Merrell Pipe Threading and Cutting Machines** do what is asked of them, it may not sound so convincing to you—but when we say that to prove this we will send you this machine for 30 days' absolutely free trial, you cannot afford to close your eyes to the fact that the Merrell at least deserves a fair, square trial.

Will you write for further particulars?

THE MERRELL MFG. CO., 17 Curtis St., Toledo, O.

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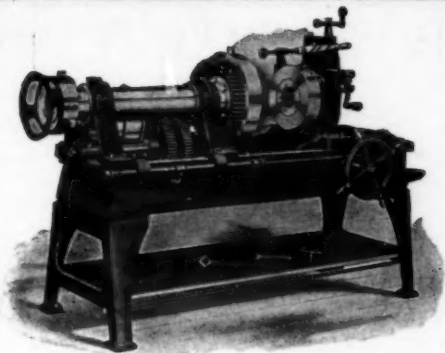
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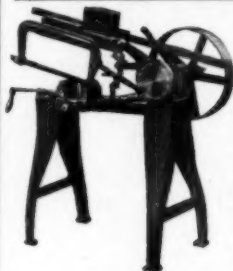
It's Very Annoying

to get ready to cut threads, and find some-
thing wrong with the machine; or to have
a hurry-up job, and have to remove a lot
of screws and plates to change dies, fill up
a tank with oil, and fuss around to get
started. That's no good way. The better
way is to have a machine that can be
made ready quick, and get the work out.

**IF YOU WANT SUCH A MACHINE,
JUST MAKE YOUR WISHES KNOWN**

Bignall & Keeler Mfg. Co.
Edwardsville, Ill.

RACINE POWER HACK SAW



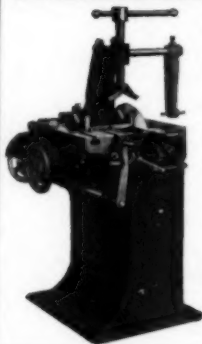
will cut off a 6 inch steel bar in one hour and twenty-five minutes. It will be almost impossible to see that the saw blade has been used. Why can we do this? Because our machine has a patent automatic lift that keeps the blade sharp, and sharp tools will cut fast. Make a test on your machine, and see how long it will take to make this cut, and how your saw blade will look.

This machine will pay for itself in a short time by saving time, material and saw blades. A trial will prove our claims.

Ask your machinery dealer for prices and particulars, or write our Department No. 9

RACINE GAS ENGINE CO., : : Racine, Wis.

A \$60 SAW



**Cuts 3x5 or 1-2x9 in.
Power Friction Feed
Automatic KnockOut
Large Clamping Table**

Write for particulars

**THE
Burke Machine Co.**

**3500 Perkins Ave.
Cleveland, : Ohio**

"1908 PATTERN"
**INDEPENDENT
LATHE CHUCK**



WHEN purchasing an independent lathe chuck, why not get one in which the jaws are ground true in the chuck body, after hardening, as in our "1908 Pattern?"

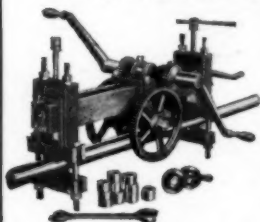
The jaws are reversed above the face of the chuck, and the operation is done without stopping to clean the adjusting screws. There are other talking points.

—
Price List and Circular on Request
—

THE SKINNER CHUCK CO.
90 N. Stanley St., New Britain, Conn.
94 Reade Street, New York City

Bloss Portable Key-Seater

**WILL PAY FOR ITSELF EVERY TIME YOU
HAVE A BREAK-DOWN IN YOUR SHOP**



Mills key-seats in the middle or on the end of shafting from $1\frac{1}{4}$ to 5 in. in diameter, without removing the shaft from its hangers or boxes. Will mill a key-seat 18 in. long and $\frac{1}{4}$ to $1\frac{1}{4}$ in. wide without resetting. Automatic worm feed; quick return by hand. Steel arbor, $\frac{7}{8}$ in., running in bronze bearings; cut gears, ratio 3 to 1; automatic and hand feed.

Price \$40.00

A very useful tool in mills, factories and machine shops

THE CINCINNATI PULLEY MACHINERY CO.

118-120 West Second St., CINCINNATI, OHIO

WHEN YOU INQUIRE

of advertisers herein, won't you kindly remember to say somewhere in your communication that the inquiry comes from Hitchcock's Machine Tool List? Advertisers are human; they like to know that the medium in which they spend their money is received and consulted by machinery users. Not being mind readers, they can only know this when you tell them, and if you neglect to tell them, the Tool List is deprived of credit for the service it has rendered.

A BETTER WAY

To Clean Small Machine Parts

**COSTS LESS THAN GASOLENE; IT IS SAFER
AND MORE CONVENIENT**



For newly made machine parts, which must be freed from oil, grease and chips for case-hardening and assembling, and for cleansing parts of machinery to be overhauled and repaired, the simplest, cheapest and only safe process is immersion in boiling lye. This is easy with our

Soda and Potash Kettles

which do the work rapidly, thoroughly, at small cost, and entirely without the risk inseparable from gasoline. Heated with a Bunsen gas burner, or a blue-flame kerosene burner. Better than steam-jacketed kettles, because they are portable and require no expensive steam fittings, traps or drains. Both cost and expense of operation are much less than steam kettles.

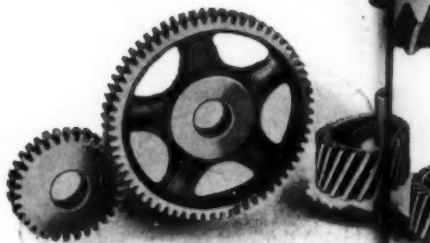
One Size:
Ten Gallons
Capacity

In stock for
immediate
shipment

**YOU WILL FIND THE PRICE ATTRACTIVE;
THEIR ECONOMY EVEN MORE SO**

THE GRAY & PRIOR MACHINE CO.
79 Suffield St., HARTFORD, CONN.

GENERATED GEARS



Generated Gears—The Silent

*We are cutting all gears—not only,
automatically, whichable
most satisfactory*



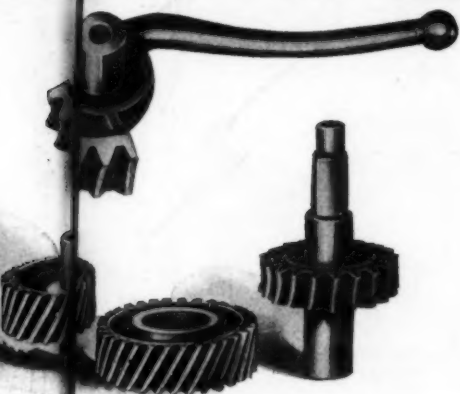
Cutting Spur Gears.

*Send us your blunts for
Best prices immediate*

The Grant-L. M.
72 Crow Avenue

Also Manufacturers of All Generated Gears

GEARS CUT TO ORDER



ars—The Silent in the World.

ot on our, but spiral and worm gears—
whichables us to make the
satisfory prices.

our blnts for estimates
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at-L Machine Co.
w Aleveland, O.
s of Aic Generating Gear Cutters



Cutting Spiral Gears.

Steel Stamps, Letters and Figures—Very Best Quality

HAND CUT ONLY

CORRECTLY
SHAPED



PROPERLY
TEMPERED

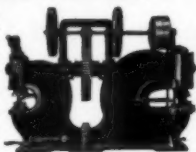
ON THE BEST CRUCIBLE STEEL

THE HOGGSON & PETTIS MFG. CO.
NEW HAVEN, CONN.

THE SUPERIORITY OF "Cincinnati" Punches and Shears

(Belt Engine or Motor Driven)

is best known to those who use them. It is in every day shop-service that these tools show their sterling qualities—their strength, solidity, power, capacity, reliability and economy. A line to us will bring the names of prominent users, who will no doubt be glad to give you inside shop information upon which you can base an intelligent selection of your punches and shears.



The Cincinnati Punch & Shear Co.
CINCINNATI, OHIO.

Makers of Punches and Shears for every duty, Bending
and Straightening Rolls, Sheet Doublers
and Coping Machines.

A Combination Grinder

For Drills, Cutters and Reamers

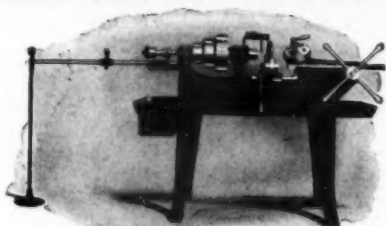


This is a new one; it and fifty other styles are shown in our new catalogue. Ask for one.

If you are not a user of **NEW YANKEE Drill Grinders** you owe it to yourself to get posted.

Wilmarth & Morman Co.
575 Canal St., Grand Rapids, Mich.

THE TILTED TURRET



**Extra Long Movement to Slide
Arranged for Absolute Alignment**

WOOD TURRET MACHINE CO.

TERRE HAUTE, : : INDIANA

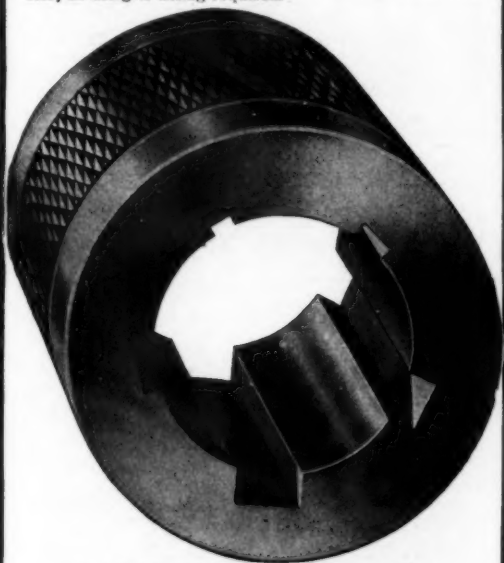
Machinery Wanted

The attention of machinery users is directed to the slip which is enclosed in each copy of the **Machine Tool List**, headed "Memorandum of Machinery Wanted." This affords a convenient method of reaching all advertisers with an inquiry for what you want, as the publisher forwards direct to each advertiser a copy of all such inquiries received.

THE NATIONAL KEY-SEAT MILLER

CUTS ABSOLUTELY ACCURATE KEY-SEATS

as easily and quickly as you can drill a hole, and with the same machine—a drill press. The work is done with a milling cutter, and is exact, because it can't be anything else; no filing or fitting required.



SAVES 50 TO 75 PER CENT

in the cost of straight or tapered key-ways or oil grooves. The tool is sold at a low price, can be operated by anybody who can drill a hole, and will do better work than a planer or shaper. Indispensable when you know its merits.

Give us a chance to tell you about them

National Machine Tool Co.

208-10 Lawrence St., Cincinnati, O.

THE BEST BY TEST

AIR COOLED



Made in
Seven Sizes:

3-16 in., $\frac{1}{4}$ in., $\frac{3}{8}$
in., $\frac{1}{2}$ in., $\frac{3}{4}$ in.,
1 in. and $1\frac{1}{4}$ in.

**IN STEEL
CENTER GRINDERS**

FROM 1-4 TO 2 H. P.

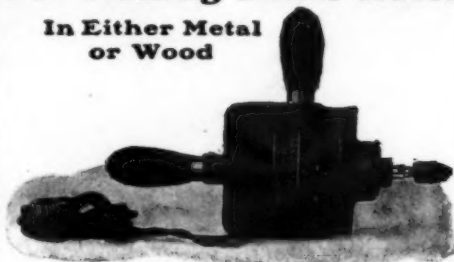
SURFACE GRINDERS

—SENT ON TRIAL—

**THE UNITED STATES ELECTRICAL TOOL CO.
CINCINNATI, OHIO**

For Making Small Holes

**In Either Metal
or Wood**



The Willey Electric Hand Drill

is the handiest and cheapest tool you can use. It drills up to $\frac{1}{2}$ in. in cast iron or $\frac{3}{4}$ in. in wood, and combines the convenience of a gimlet with the speed of a power drill. Any lamp-socket supplies the power; no special skill or brains required. A great time saver.

James Clark, Jr., Electric Co., (INCORPORATED) Louisville, Ky.

Makers of Electric Breast Drills, Center and Surface Grinders.

Do you want to advertise to automobile manufacturers?

You can cover this trade pretty thoroughly by using the seventeen automobile journals published in this country.

Do you care to reach manufacturers of saw-mill and wood-working machinery?

You can do so fairly well by using upwards of half a dozen good journals in that field.

Do you wish to cover the thousands of manufacturers, in the scores of different industries, who use machine tools?

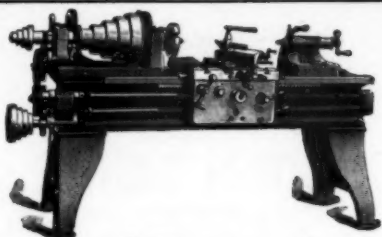
You may be able to reach 80 per cent of them by placing your advertisements in the hundreds of trade journals that represent those various lines;

OR,

by using all the machine tool papers you may reach possibly 50,000—say 10 per cent—of the 500,000 people in the United States employed in handling such machinery;

BUT,

if you want to advertise your tools to *all* the concerns in *every line* of manufacture in which machine tools are used, there is only one medium in which it can be done—the booklet you are looking at right now.



Standard Engine Lathes

16 to 24 Inch Swing

—BUILT BY—

Greaves, Klusman & Co.

N. E. Cor. Cook & Alfred Sts., Cincinnati, O., U. S. A.

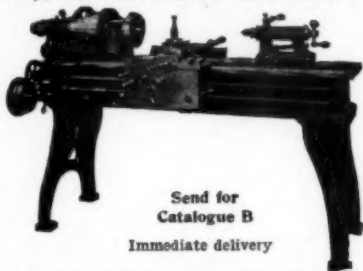
ALSO BUILDERS OF

**Pattern Makers' Lathes & Machinery
and Metal Spinners' Lathes**

NEW AND IMPROVED

"MIAMI VALLEY"

13 1/2 IN. ENGINE LATHES



FOR MANUFACTURING,
JOB SHOP or TOOL ROOM

Taper Attachment, Draw
Spindle & Carriage Turret

Send for
Catalogue B

Immediate delivery

The Miami Valley Machine Tool Co.

839 Germantown St.

:

:

Dayton, O., U. S. A.

TEN SECOND-HAND

No. 2½ HENDEY

LINCOLN MILLERS

Tables, 11 x 42 in.

The W. M. Pattison Supply Co.
(Machinery Department)
Cleveland, Ohio

CONCRETE
and Reinforced Concrete Construction

By HOMER A. REID, Asso. Mem. Am. S. C. E.
Asst. Engr. Bureau of Buildings, New York City.

Contains more new, up-to-date information about concrete and reinforced concrete construction than any other book ever published. The data on tests, theory and practice are the latest, and embody much material never before available. Invaluable to anyone interested in Concrete.

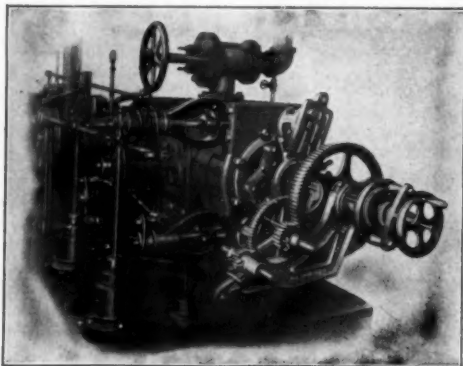
Price, \$5.00, Net, Postpaid.

A. H. HITCHCOCK
626 Monadnock Blk. :: CHICAGO, ILL.

Portable Machine Tools

Are MONEY SAVERS for Railway and
Other Shops Doing Large Repair Work

The job is often completed in less time than would be required to detach the defective part for removal



Portable Bar Boring Corliss Engine Cylinder.
(With only one head off.)

We make a variety of these boring bars, suitable for boring all kinds of engine, compressor, pump and other cylinders, valve seats, etc., in place, as well as bars for special service, such as finishing the cylinders of turbine engines, cylinders and valve seats of compound locomotives, taper boring and similar work. In accuracy these bars are equal to the best shop tools; in point of economy, they often save more than their cost on a single job, by obviating the necessity of taking a heavy machine to pieces for removal to the shop.

Also portable tools for milling, facing, valve seat and radius planing, machines for planing driving boxes, turning crank pins, facing domes and cylinder flanges, turning eccentrics, etc., etc. . . . Write for one of our Catalogues.

L. B. Flanders Machine Works (Est. 1870)

H. B. UNDERWOOD & CO.

1022 Buttonwood St., Philadelphia, Pa.

Second-Hand Machinery.

Lists of second-hand machinery, either for sale or wanted, will be published under this heading at the rate of **40 cents a line**, across the page, each issue, with a minimum charge of **\$4.00**. Sub-headings are counted as one line, but the name and address of advertiser are not included in the space charged for. Prices and full descriptions of the machines listed will be furnished by the parties offering them for sale. If you do not find what you require, use the slip inclosed with each book to make known your wants to the publisher.

FOR SALE BY

The Kern Machine Tool Co., . . . Cincinnati, Ohio.

Pulley lathes, Streit patent, one 20 in. and one 30 in., in use less than three months, and are in every respect as good as new.

For rapid turning of pulleys, nothing can equal these lathes.

Write for description and prices.

FOR SALE BY

**Wm. C. Johnson & Sons Machinery Co.,
210-212 Washington Ave. . . . St. Louis, Mo.**

LATHES.

16 in. x 8 ft., Blaisdell.

18 in. x 8 ft., Flather.

20 in. x 18 ft., screw cutting.

30 in. x 18 ft., Pond.

36 in. x 18 ft., Schumacher & Boye.

SHAPERS AND PLANERS.

24 in., traveling head shaper.

24x24 in. x 6 ft., New Haven.

36x36 in. x 12 ft., Niles.

36x36 in. x 14 ft., Gray, 2 heads.

MISCELLANEOUS.

Bolt cutter, 1½ in., National.

Boring mill, 10 ft., Morton-Poole, 2 heads.

Crane, electric driving, 10 ton, 50 ft. span.

Cranes, jib (2).

Drill, portable, Dallet.

Drill, universal radial, 6 ft., Niles.

Drop for breaking castings, Foundry outfit, complete, including cupola.

Hammer, 350 lb., steam.

Keyseater, No. 2 Catlin.

Pipe machine, 6 in.

Planing machine, rotary, for facing columns, large, heavy.

FOR SALE BY

The Patterson Tool & Supply Co., . . . Dayton, Ohio.

LATHES.

14 in. x 5 ft., Hendey.....\$190

18 in. x 8 ft., solid spindle, chuck 150

20 in. x 8 ft., Fifeild..... 225

35 in. x 10 ft., 6 in. raising blocks 175

43 in. x 16 ft., American Tool Works, triple geared head, raising blocks to 56 in., union face-plate jaws, in fine condition.

PLANERS AND SHAPERS.

15x15 in. x 3 ft. planer.....\$125

15x22 in. x 5 ft. planer..... 90

22x22 in. x 5 ft. planer..... 150

22x22 in. x 6 ft. planer, Powell... 250

16 in. shaper, Smith & Mills...\$240
26 in. shaper, Cincinnati, triple geared, power down feed..... 300

DRILLS AND BORING MACHINERY.

36 in. drill press.....\$ 40

42 in. drill, revolving table..... 75

4 spindle, Pratt & Whitney..... 125

4 spindle, Garvin, no counter-shaft (2). Each.....\$ 40
No. 1 Niles horiz. boring mach. 600

MISCELLANEOUS.

Gas engine, 8 h. p., Dayton.....\$150

Gas engine, 10 h. p., Callahan... 225

Gas engine, 16 h. p., New Era... 275

Knife grinder, 76 in., B. T. & B. ...

Miller, universal, No. 1½ Cincinnati, complete..... 450

Pipe machine, 4 in., Forbes....\$ 75

Pipe machine, 6 in., Oster..... 150

Pipe machine, 6 in., Merrell 200

Punch and shear, No. 12-D

Cleveland 350

Wood planer, 24 in., Francis.... 125

SECOND-HAND MACHINERY

FOR SALE BY

C. C. Wormer Mach'ry Co., 94-96 W. Woodbridge St., Detroit, Mich.

LATHES.

- | | |
|---|---|
| 9x40 in., Barnes, foot power. | 16 in. x 8 ft., LeBlond, comp., quick change gears, pan bed. |
| 12 in. x 5 ft., Dexter, swivel rest. | 16 in. x 8 ft., Draper. |
| 14 in. x 4 ft., LeBlond, bk. gd., stud. | 18 in. x 8 ft., LeBlond, comp., standard, turret on car. |
| 14 in. x 4 ft., LeBlond, pl., standard. | 18 in. x 8 ft., LeBlond, cp., standard. |
| 14 in. x 5 ft., LeBlond, cp., standard. | 18 in. x 10 ft., LeBlond, comp., standard, and taper. |
| 14 in. x 6 ft., LeBlond, cp., standard. | 20 in. x 8 ft., LeBlond, comp., standard, turret on shear. |
| 14 in. x 6 ft., LeBlond, quick chg. gr. | 20 in. x 8 ft., plain, standard. |
| 14 in. x 6 ft., LeBlond, comp., standard, with taper. | 20 in. x 8 ft., LeBlond, special turret on special car. |
| 14 in. x 6 ft., Prentice. | 20 in. x 10 ft., LeBlond, high speed. |
| 14 in. x 8 ft., Reed. | 20 in. x 10 ft., Reed. |
| 14 in. x 8 ft., Prentice. | 20 in. x 18 ft., LeBlond, high speed, reducing, dbl. roughing carriage. |
| 16 in. x 6 ft., Reed. | 24 in. x 10 ft., LeBlond, quick chg. gr. |
| 16 in. x 6 ft., Blaisdell, r. & f. rest. | 24 in. x 10 ft., Bridgeport, with chuck. |
| 16 in. x 6 ft., LeBlond, cp., standard. | 24 in. x 13 ft., New Haven, cp. rest. |
| 16 in. x 6 ft., Blaisdell, with taper. | 60 in. Stevens, pulley, with boring and crowning attachments. |
| 16 in. x 6 ft., LeBlond, r. & f., stand. | |
| 16 in. x 8 ft., plain, standard, turret on shears. | |
| 16 in. x 8 ft., LeBlond, comp., standard, with taper. | |
| 16 in. x 8 ft., LeBlond, standard. | |

MILLERS.

- | | |
|--------------------------------------|---------------------------------|
| No. 5 Becker & B., plain, all feeds. | No. 2 LeBlond, plain. |
| No. 0 LeBlond, plain. | No. 3 $\frac{1}{2}$ Fox, plain. |

SHAPERS.

- | | |
|------------------------------------|------------------------------------|
| 16 in., Kelly, plain crank. | 24 in., Hendey, friction gd. rack. |
| 20 in., Gould & Eberhart, crank. * | 26 in., Kelly, back geared crank. |

PLANERS.

- | | |
|------------------------------------|--|
| 26x25 in. x 6 ft., Draper. | 30x30 in. x 8 ft., Cincinnati, with right angle drive. |
| 31x31 in. x 9 ft. 9 in., Brettell. | |

HAMMERS.

- | | |
|--------------------------|------------------------|
| 100 lb., rope lift drop. | Hackney, double frame. |
|--------------------------|------------------------|

DRILLS.

- | | |
|--|---------------------------------------|
| 24 in., Aurora, back geared. | 4 ft., gang radial. |
| 34 in., Curtis & Snyder, back geared, with power rotary table. | No. 1 Foote-B., 4 spindle, universal. |
| | No. 5 Barr, sensitive. |

SHEARS.

- | | |
|--|---------------------------------------|
| 14 in. throat, circle shear. | 36 in., Hercules, foot pwr. squaring. |
| 20 in., Bliss, power squaring. | 10 ft. 10 in., foot power squaring. |
| 22 in., P.-S. & W., ft. pwr. squaring. | No. 13 Badger State, 7 in. blade. |

BORING MILLS.

- | | |
|---------------------------------------|---|
| 30 in., Gisholt, vertical. | 48 in., Harrington, vertical. |
| 48 in., No. 52 Bement & D., vertical. | 9 ft., Sellers, with facing attachment. |

SCALES.

- | | |
|------------------------------------|--------------------------------------|
| 10 lb., Fairbanks, bench platform. | 1,000 lb., platform scale. |
| 800 lb., No. 11 Fairbanks. | 30,000 lb., hopper scale, Fairbanks. |

GRINDERS.

- | | |
|--|-------------------------------|
| Cincinnati, plain tool grinder. | Hisey-Wolf, type B, 220 volt. |
| No. 1 Cincinnati, univ. cutter & tool. | No. 6 Gardner, double disc. |
| No. 6 Pratt & Whitney, cutter. | No. 10-C Besley, spiral disc. |

MISCELLANEOUS.

- | | |
|---|---------------------------------------|
| Benches, 130 ft. of hard maple. | Milling mach. vise, No. 4 LeBlond. |
| Benches, coremakers', misc. (3). | Motor, a. c., 20 h. p., 440 volt. |
| Benches, moulders', misc. (4). | Pulley drilling and tapping machine. |
| Bench tapper, with 2 in. 3-jaw chuck. | Screw machine, No. 1 Foster-K. |
| Brake, cornice, No. 8, imp. dbl. truss. | Shop saw, No. 1 Q. & C., cap. 4x4 in. |
| Bench filer & hack saw, str. 0 to 6 in. | Sprue cutter, 10 in. throat. |
| Centering machine, No. 2 Whiton. | Tap & thread'g mch., No. 1 Allen. |
| Cutting-off machine, 3 in., P. & W. | Wire straightener and cut-off mach., |
| Drill press chuck, No. 3 Cincinnati. | No. 1 Schuster, long cut, auto. |

Prices and description on application.

SECOND-HAND MACHINERY

FOR SALE BY

Marshall & Huschart Machinery Company,

62-66 S. Canal St., Chicago.

109 Kentucky Ave., Indianapolis.

908-910 North Second Street, St. Louis.

BOLT CUTTERS.

1½ in., Putnam, single head.

1½ in., National, complete.

DRILLS.

18 in., upright, stationary head.

24 in., sliding head, back geared.

26 in., Barnes, stationary head, back geared, power feed.

3 spindle, Barnes, 16 in. gang.

4 spindle, Garvin.

4 ft., Niles, plain radial.

4 ft., Univ. Radial Drill Co., pl. radial.

5 ft., Niles, half universal radial, gear feed, latest pattern.

GRINDERS.

Barr, complete.

8 in., Heald, ring and surface, new.

8x26 in., Diamond, roll, plain.

10x30 in., Morse, plain.

12x42 in., Landis, universal.

20 in., Northampton, water.

LATHES.

13x6, Pratt & Whitney, turning.

14x5, Hendey, engine, comp. rest, hand cross feed.

14x6, Putnam, comp. rest, 2 chucks.

14x6, Flather, pl. rest, h. s., 2 chucks.

15x9, Sebastian, gap, chuck fitted.

16x6, Pratt & W., tool room, hollow spindle, swivel, plain rest, taper.

16x8, Lodge & Shipley, 3-step cone, double back gears.

18x8, New Haven, hol. spdl., pl. rest.

18x8, Lodge & D., hol. spdl., pl. rest.

23x10, Greaves & K., cp. r., h. s., ck.

24x12, Lodge & Shipley, 5-step cone, compound rest.

25x25, Blaisdell, plain gd. rest, chuck.

26x12, Ames, solid spindle, plain rest.

28x16, Fifield, compound rest.

28x24, Freeland, pl. rest, screw feed.

29x16, Harris, plain elevating rest, screw feed.

30x14, Fifield, compound rest.

32x16, New Haven, compound rest.

33x12, Ames, cp. rest, chuck fitted.

PULLEY LATHES.

26 in., Stevens.

36 in., Niles.

Axle, Bement, double head.

40 in., Schellenbach, pulley boring and turning machine.

MILLING MACHINES.

No. 0 Cincinnati, plain, belt feed.

No. 2 Lodge & D., plain, back gd.

No. 2 Cincinnati, universal, bk. gd.

Newton, vertical, large.

Lincoln, power feed.

No. 3 Cincinnati, universal, back gd.

PLANERS.

20x20 in. x 8 ft., M. & H.

24x24 in. x 4 ft., New Haven, 1 head.

24x24 in. x 5 ft., Whitcomb, 1 head.

24x24 in. x 8 ft., Lodge & D., 1 head.

25x15 in. x 5 ft., planer, 1 head.

27x27 in. x 6 ft., Ohio, 1 head.

27x27 in. x 8 ft., New Haven, 1 head.

30x30 in. x 8 ft., Pease, 1 head.

36x36 in. x 16 ft., Hewes & Phillips, 2 heads.

44x44 in. x 10 ft., New Haven, 2 hds.

70x48 in. x 27 ft., Pond, 1 head.

SHAPERS.

24 in., Lodge & Davis, shifting belt.

24 in., Gould & E., b.g., crank, new.

SCREW AND TURRET MACHINES.

3 in., Cleveland full automatic screw machine.

3 in., Garvin wire feed screw mach.

3 in., Cleveland auto. screw mach.

1½ in., Pratt & W. screw machine.

2 in., Jones & Lamson turret lathe.

No. 4 Windsor turret lathe.

16 in., Warner & Swasey turret lathe.

22 in. x 6 ft., Lodge & D. turret lathe.

No. 3 Bardons & Oliver turret lathe.

42 in., New Haven turret lathe.

48 in., Gisholt gap turret lathe.

MISCELLANEOUS.

Cold saw, 22 in., Espen-Lucas.

Gear cutter, Whiton, hand feed.

Hammer, 1,100 lb., fric. board drop, overhead works.

Hammer, 1,100 lb., Bement, single frame, steam.

Keyseater, Mitts & Merrill, small.

Notching press 36 in. Ferracute.

Pipe machine, 2 in., Jarecki.

Pipe machine, 3 in., Bignall & K.

Press, No. 75 Toledo.

Send for our complete list of second-hand tools.

SECOND-HAND MACHINERY

FOR SALE BY

Ohio Machinery & Construction Co.,

Cleveland, Ohio.

BULLDOZERS.

- 4 No. 6 Williams-White, standard, single end, high heel pattern, 8 in. belt drive, operated by clutch, floor space 13x8 ft., ram 56x12 in. face, heel 66x13 in., two years old, first-class condition.

PRESSES.

- 2 Garrison Foundry Co., 49 in. between uprights, stroke 8 in., slide 14x60 in., crank shaft 6 in., suitable for forging, heavy stamping, gang punching or use as a shear, used three months, cost new \$2,500 each.

Will make very low prices for quick sale.

FOR SALE BY

Niles-Bement-Pond Company,

111 Broadway, New York.

LATHES.

- No. 4 Stark, bench, compound, slide rest.
No. 4 Rivett, compound, slide rest. 8 in., precision, Rivett.
13 in. x 5 ft., Pratt & Whitney, rise and fall and taper.
14 in. x 6 ft., Putnam, compound and taper.
14 in. x 6 ft., Prentiss, compound and taper.
14 in. x 6 ft., Pratt & W., comp. rest.
16 in. x 6 ft., Bradford, cp. and taper.

- 16 in. x 6 ft., Hendey, comp., taper and pan.
16 in. x 6 ft., Fitchburg, comp. and taper.
16 in. x 6 ft., Putnam, motor drive, 110 v., new.
16 in. x 6 ft., Putnam, motor drive, 220 v., new.
18 in. x 8 ft., Putnam, motor drive, 110 v.
24 in. x 12 ft., Putnam, compound, motor, 110 v.

TURRET MACHINERY.

- 1/2 in. capacity, No. 60 Garvin, wire fd.
1/2 in. capacity, No. 1 Pratt & W., wire feed.
1/2 in. capacity, No. 2 Pratt & W., wire feed.
1 in. capacity, No. 2 Warner & S., wire feed.
1 1/2 in. capacity, No. 3 Bardons & O., wire feed, friction head, power feed to turret.
2x24 in., Jones & Lamson, flat turret.

- 1 1/2 in. capacity, No. 3 Pratt & W., wire feed, friction head, power feed to turret.
1 1/2 in. capacity, No. 3 Pratt & W., wire feed, friction head, power feed to turret.
2x24 in., Warner & Swasey, hollow hexagon turret.
24 in., Conradson, turret lathe.
24 in., Gisholt, turret lathe.

PLANERS AND SHAPERS.

- 16x16 in. x 4 ft., Pratt & W. planer.
24x24 in. x 6 ft., Putnam, 110 v. motor, good as new.

- 17x17 in. x 4 ft., Whitcomb planer.
18 in., Cincinnati, dbl. head traverse shaper.

DRILLS.

- 13 in., motor drive, 110 v., friction.
28 in., Snyder, sli. hd., bk. gr., pr. fd.
30 in., Gould & E., slid'g head, back gear, power feed.
24 ft., Gang, radial.
5 ft., Niles, semi-universal, radial.
5 ft., Niles, full universal, radial.
6 ft., Niles, semi-universal, radial.

- 2 spindle, Henry & W., sensitive.
3 spindle, Sigourney, sensitive.
4 spindle, Henry & W., sensitive.
4 spindle, Sigourney, sensitive.
4 spindle, Barr, type G, heavy, sens.
No. 11 P. & W., multiple spdle., adj.
No. 10 Pratt & W., type H, multiple spindle, 220 v. motor.

MILLING MACHINES.

- No. 1 American, plain.
No. 3 Becker-B., new model, plain.
No. 5-B, vertical, with rotary.

- No. 5 Becker, with rotary.
No. 13 Pratt & W., new model, profiler.

MISCELLANEOUS.

- Belt lacing machine, 6 in.
Cold saw, No. 11 Higley.
Disc grinder, No. 3 Besley.
Hammer, compact, 110 lb., Bradley.
Keyseater, No. 2 Mitts & Merrill.
Splitting shear, 1/2 in. capacity, No. 2 Long & Aistatter.

- Turret borer, 36 in., No. 2 Brown & Sharpe.
Vertical mill, 37 in., Bullard.
Vertical mill, 37 in., Niles.
Vertical mill, 51 in., Niles.
Vertical mill, 72 in., Niles.
Vertical mill, 21 ft., Niles.

SECOND-HAND MACHINERY

FOR SALE BY

The H. A. Stocker Machinery Co., 20-22 S. Clinton St., Chicago.

LATHES.

- 18 in. x 8 ft., Springfield, compound rest and taper, turret fitted to carriage, chuck fitted, fine order.
 24 in. x 12 ft., Lodge & Davis, taper attachment.
 24 in. x 12 ft., New Haven, cp. rest.
 32 in. x 16 ft., Fay & Scott, cp. rest.
 32 in. x 17½ ft., New Haven.
 36 in. x 18 ft., Putnam, comp. rest.
 42 in. x 18 ft., Niles.
 48 in. x 21 ft., Putnam, t. b. g.
 54 in. x 20 ft., New Haven, t. b. g.
 24 in., turret, Davis, set-over turret.
 24 in., turret, Foster-Kimball, 5 in. hole in spindle.
 20 small lathes, various makes.

PLANERS.

- 16x16 in. x 4 ft., Hendey.
 17x17 in. x 4 ft., Whitcomb.
 20x20 in. x 5 ft., Pratt & Whitney.
 24x24 in. x 5 ft., Powell, good order.
 24x24 in. x 6 ft., Amer. Tool Works.
 26x26 in. x 8 ft., Lodge & Davis.
 32x32 in. x 14 ft., Flather, o.s.at., 2 hds.
 36x36 in. x 8 ft., Am. Tool Wks., fine.
 36x36 in. x 12 ft., Belmer, 2 hds., fine.
 40x40 in. x 11 ft., Putnam, 1 head.

BORING MILLS.

- No. 1 Fosdick, horizontal, fine order.
 No. 3 Meadville, hor. bor'g & drill'g.
 Binsse No. 5, hori. boring, drilling & milling machine, p. c. f. to table.

GEAR CUTTERS.

- 36 in., Gleason, gear planer, equal to new.
 36 in., Becker-B., spur and bevel.
 42 in., Gould & E., spur only.
 50 in., Gould & E., spur, bev. & spiral.
 60 in., Gould & E., spur only.
 72 in., Gould & E., spur only.
 Gear cutters are all in fine condition.

MILLING MACHINES.

- No. 1 Pratt & Whitney, hand.
 No. 1 Garvin, Lincoln pattern.
 No. 3-H Becker-Brainerd, profiler, good as new.
 No. 5-B Becker-Brainerd, plain, with union head, fine order.
 No. 4½ Burr, keyseat miller, takes up to 6 in.
 No. 1 Brown & Sharpe, universal.
 No. 3 Brown & Sharpe, universal.
 No. 2 Putnam, universal.
 No. 9 Kempsmith, plain, back gd.
 No. 2 Cincinnati, plain, back gd.
 No. 0 Brown & Sharpe, plain.
 No. 3 Chicago, hand, vertical spindle.
 Whitney, hand miller.

SCREW MACHINES.

- ¾ in., Cleveland, automatic.
 1 in., Hartford, automatic.
 1½ in., Hartford, automatic.
 2x24 in., Jones & Lamson, fine order.
 Brown & Sharpe No. 2, automatic, practically new.
 3 Brown & S. No. 2, automatic, 1895 pattern, good working order.
 2 Brown & S. No. 00, automatic, new.
 17 hand screw mches., various sizes.
 Large stock of turret lathes.

DRILLS.

- 4 spindle, Reddington, with chucks.
 3 spindle, Sigourney, with chucks.
 2 spindle, Foote-Burt, adjustable.
 Prentice, suspension, with over-head works, for boiler plate.
 Dallet, portable, complete.
 42 in., Bickford, power rotary feed to table, and facing attachment with power feed.
 Also other drills, 20 to 42 in. Write.

SHAPERS.

- 15 in., Walcott, geared.
 16 in., Ohio, crank.
 20 in., Kelly, back geared.
 24 in., Cincinnati, back geared.
 26 in., Walcott, triple geared.
 34 in., Walcott, triple geared.

MISCELLANEOUS.

- Axle cutting-off and centering machine, 9 in., good condition.
 Bolt cutter, National, 2½ in.
 Bolt cutter, Adams, 2½ in.
 Bolt header, Burdick, 4 in.
 Borer, car wheel, Niles, 42 in.
 Bulldozer, No. 5 Williams & White.
 Cutter grinder, No. 1 Cincinnati.
 Cutting-off machine, P. & W., 2 in.
 Cutting-off machine, H. & R., 4 in.
 Hammer, Bradley, 25 lb.
 Hammer, L. & A., 60 lb.
 Hammer, drop, 1,000 lbs.
 Keyseater, No. 3 Baker Bros., fine.
 Keyseater, No. 3 Mitts & M., good.
 Nut tapper, Acme, 6 sp., 2 in., good.
 Pipe machine, Bignall & K., 3 in.
 Pipe machines, Nos. 7 & 9 Jarecki.
 Press, No. 75 Crosby, straight sided.
 Press, power, No. 2½ V. & O.
 Pulley lathe, 30 in., Schellenbach.
 Pulley lathe, 42 in., Schellenbach.
 Pulley lathe, 62 in., Lodge & Shipley.
 Punch & shear, Cleve., style E, 1½x1.
 Punch & shear, No. 4 Cincinnati, 1x1 in.
 Punch & shear, No. 7 Long & A., double end.
 Slotter, Niles, 12 in., equal to new.
 Wheel press, hydraulic, 40 ton.
 Wheel press, hydraulic, 200 ton.

SECOND-HAND MACHINERY

FOR SALE BY

O. L. Packard Machinery Co., . Chicago, Ill., and Milwaukee, Wis.

LATHES.

14 in. x 6 ft., Flather, taper attach't. | 24 in. x 16 ft., Lodge & Shipley.
24 in. x 12 ft., New Haven. | 26 in. x 12 ft., Davis & Egan.

PLANERS.

24x24 in. x 5 ft., Pond. | 36x36 in. x 10 ft., Pond, almost new.
24x24 in. x 6 ft., Pease.

SHAPERS.

14 in. x 9 ft., dbl. table, traveling hd. | 16 in., Steptoe, crank.

DRILLS.

5 ft., American, plain radial. | 5 ft., Cincinnati, full univ., radial.

GEAR CUTTERS.

36 in., Brainard, automatic, spur and bevel gear.

HAMMERS.

100 lb., Bradley, strap.

MISCELLANEOUS.

Cut-off machine, 3 in., Hurlbut & R. | Grinder, drill, Washburn.
Die milling machine, Thurston.

FOR SALE BY

The Osborne & Sexton Machinery Co., . Columbus, Ohio.

LATHES.

12 in. x 5 ft., LeBlond, comp. rest. | 24 in. x 9 ft., N. Y. S. E. Co.
13 in. x 5 ft., Pond, rise & fall rest. | 24 in. x 12 ft., Bradford, cp. r., ta. att.
14 in. x 6 ft., Steptoe, rise & fall rest. | 24 in. x 23 ft., N. Y. S. E. Co., cp. r.
14 in. x 6 ft., Carroll-Jamison, cp. r. | 28 in. x 7 ft., N. Y. S. E. Co.
16 in. x 6 ft., Fitchburg. | 28 in. x 12 ft., Putnam, comp. rest.
18 in. x 6 ft., Steptoe, rise & fall rest. | 36 in. x 7 ft., N. Y. S. E. Co.
18 in. x 7 ft., Steptoe, rise & fall rest. | 32 in. x 16 ft., Niles, compound rest.
18 in. x 7 ft., Turrett. | 36 in. x 9 ft., N. Y. S. E. Co.
18 in. x 8 ft., N. Y. S. E. Co. | 54 in. x 12 ft., N. Y. S. E. Co., cp. r.
20 in. x 6 ft., Pond, plain rest. | 60 in. x 25 ft., Wood-Light, cp. rest.
20 in. x 11 ft., N. Y. S. E. Co., cp. r. | 96 in. x 16 ft. 6 in., pit lathe.
21 in. x 10 ft., Fitchburg, comp. rest.

PLANERS.

20x20 in. x 5 ft., N. Y. S. E. Co., | 36x32 in. x 9 ft., N. Y. S. E. Co.
grinding attachment. | 48x48 in. x 20 ft., Wood-Light.
24x24 in. x 5 ft., N. Y. S. E. Co.

MISCELLANEOUS.

Bolt cutter, 2 in., Acme, standard. | Hammer, helve, 25 lb.
Bolt cutter, 2 in., Acme, stay bolt. | Hammer, Beaudry.
Bulldozer, No. 4 Williams & White. | Hammer, steam, 1200 lb., Morgan.
Cutter and reamer grinder, Garvin. | Milling machine, Lincoln.
Drill, radial, 5½ ft., Fostick. | Pick eye machine (punch).
Drill, 20 in., w. and l. feed. | Punch and shear, small.
Drill, 28 in., power feed. | Punch and shear, single, large.
Drill, 36 in., power feed. | Punch and shear, double, large.
Drill, 36 in., double, for boiler shop. | Rolls, boiler plate, 84 in.
Flexible shaft, Stow. | Shears, beveling, for boiler plate.
Gear cutter, 36 in., Gould. | Slotter, 10 in., A.1 condition.

FOUNDRY EQUIPMENT.

Cupola, 1 ton. | Cupola, 5 ton.
Cupola, 3 ton. | Core oven, iron, with trucks.

MOTORS.

½ h. p., G. E., 220 volt, 3 phase. | 7½ h. p., Fairbanks, 220 volt, 3 phase.
2 h. p., Fairbanks, 220 volt, 3 phase. | 10 h. p., Fairbanks, 220 volt, 3 phase.
3 h. p., Fairbanks, 220 volt, 3 phase. | 15 h. p., Fairbanks, 220 volt, 3 phase.
5 h. p., G. E., 220 volt, 3 phase. | 15 h. p., Commer'l, 220 volt, 3 phase.

We have many other iron-working machines not listed, and ask that you state your wants by letter.

SECOND-HAND MACHINERY

FOR SALE BY

Prentiss Tool & Supply Co., New York, Boston, Buffalo, Syracuse.

LATHES.

- | | |
|---|--|
| 11 in. x 4 ft., Mann, compound rest. | 22 in. x 12 ft., Fifield, compound rest, power cross feed. |
| 12 in. x 5 ft., Reed, comp. rest, power cross feed, hollow spindle. | 24 in. x 14 ft., Lodge & S., triple gd. |
| 14 in. x 6 ft., Le Blond, comp. rest, quick change, power cross feed. | 31 in. x 10 ft., Putnam, comp. rest, power cross feed. |
| 15 in. x 8 ft., Prentice Bros., rise and fall. | 33 in. x 12 ft., Putnam, comp. rest, power cross feed. |
| 16 in. x 6 ft., Prentiss, Cyclone, cp. rest, power cross feed. | 33 in. x 26 ft., Putnam, comp. rest, power cross feed. |
| 17 in. x 6 ft., Hamilton, comp. rest, power cross feed. | 36 in. x 15 ft., Lathe & Morse, comp. rest, power cross feed. |
| 18 in. x 8 ft., Pratt & W., comp. rest. | 48 in. x 17 ft., Pratt & W., triple gd., comp. rest, power cross feed. |
| 21 in. x 10 ft., LeBlond, comp. rest and chucks. | 26-44 in. x 18 ft., McCabe, dbl. spdle. |

PULLEY LATHES.

- | | |
|-----------------------------|-----------------------------|
| 26 in. and 50 in., Stevens. | 60 in. x 10 ft., New Haven. |
|-----------------------------|-----------------------------|

MILLERS.

- | | |
|-------------------------------------|--------------------------------------|
| Nos. 1 and 2 Pratt & W., hand. | No. 3 Cincinnati, plain. |
| No. 3 Kempsmith, hand. | No. 3 Cincinnati, universal. |
| No. 2 Fox, hand. | Nos. 3 and 4 Brown & S., plain. |
| No. 2 Kempsmith, plain. | No. 22 Garvin, vertical. |
| No. 14 Garvin, plain, geared feed. | No. 5 Becker-B., vert., with rotary. |
| No. 2 Cincinnati, plain, all feeds. | No. 22 Brainard, plain. |

DRILLS.

- | | |
|---|---|
| Nos. 1, 2 and 3, Bickford, pl. radials. | 24 in., Gang, radial. |
| Nos. 1 and 2, Bickford, univ. radials. | 25 in., Gould & Eberhardt, sliding head, complete. |
| 12 in., Davis, sensitive, 1 spindle. | 28 in., 31 in. and 34 in. Barnes, sliding head, complete. |
| 12 in., Slate, sensitive, 2 spindle. | 28 in., Snyder, sliding hd., b. g., p. f. |
| 12 in., sensitive, 3 and 4 spindle. | 34 in., Barnes, sliding hd., complete. |
| 20 in., Aurora, power feed. | |
| 21 in., Aurora, back gd. wheel feed. | |

SHAPERS.

- | | |
|--------------------------------|------------------------------|
| 16 in., Hamilton, plain crank. | 48 in., Morton, draw stroke. |
|--------------------------------|------------------------------|

BORING MILLS.

- | | |
|--|-------------------------|
| 34 in., Colburn, turret head. | 38 in., McCabe, 1 head. |
| 36 in., Brown & Sharpe, vertical chucking machine. | 51 in., Niles, 2 heads. |

GEAR CUTTERS.

- | | |
|---|------------------------------------|
| 30 in., 33 in. and 50 in., G. E., auto. | 18 in. and 24 in., Brown & Sharpe. |
|---|------------------------------------|

PRESSES.

- | | |
|-----------------------------|---------------------------------------|
| Nos. 18 and 19, inclinable. | No. 6 R. & K., geared, extra heavy. |
| No. 4 V. & O., geared. | No. 34-A Bliss, toggle joint drawing. |

PLANERS.

- | | |
|---------------------------------------|---------------------------------------|
| 20x20 in. x 4 ft., New Haven, 1 head. | 30x30 in. x 14 ft., Gray, 2 heads. |
| 22x22 in. x 5 ft., Farrell, 1 head. | 32x32 in. x 8 ft., Gray, 1 head. |
| 26x24 in. x 6 ft., Ferris & Miles. | 50x36 in. x 14 ft., Pond, 2 heads. |
| 30x30 in. x 8 ft., Smith & Silk. | 60x60 in. x 22 ft., Hepworth, 1 head. |

SCREW MACHINES AND MONITORS.

- | | |
|---------------------------------------|--|
| 7-16 in., Pratt & Whitney, wire feed. | 1 1/2 in., Warner & Swasey, wire feed. |
| 4 in., Pratt & Whitney, wire feed. | 2 in., Windsor, wire feed. |
| 8 in., Warner & Swasey, wire feed. | 2x24 in., Jones & Lamson, flat turret. |
| 1 in., Garvin, wire feed. | 1 1/2 in., Spencer, double end, auto. |

HAMMERS.

- | | |
|-------------------------------------|---|
| 60 lb. and 150 lb., Bradley, helve. | 100 lb., 800 lb. and 1,200 lb., board drop. |
| 175 lb., Beaudry, trip. | |

MISCELLANEOUS.

- | | |
|---------------------------------|-------------------------------------|
| Cutting-off machine, 2 to 6 in. | Riveter, 1/2 in., Shuster. |
| Metal band saw, No. 2 Wright. | Slotter, 12 in., Newton. |
| Pipe machine, 4 in., Saunders. | Surface grinder, Walker, automatic. |
| Profiler, Garvin, 1 spindle. | Tool grinder, Gisholt, universal. |

SECOND-HAND MACHINERY

FOR SALE BY

Perkins & Frecker, . . . 136 Liberty St., New York, N. Y.

LATHES AND SCREW MACHINES.

11 in. x 5 ft., Mann, rise and fall rest.	21 in. x 6 ft., Fifield, comp. rest.
13 in. x 5 ft., Prentiss, comp. rest.	27 in. x 12 ft., Fifield, comp. rest.
16 in. x 6 ft., Flather, plain rest.	1 in., Dreses, turret, auto. chuck.
20 in. x 8 ft., McMahon, comp. rest.	1 in., P & W., wire fd. screw mach.

MISCELLANEOUS.

Grinder, 20 in., wet tool.	Scale, 1 ton, standard.
Motor, 5 h. p., P., C. & C.	Shaper, 24 in., Hendey.

Anvils, Pulleys, Shafting, Belting, etc.

Write us your wants.

FOR SALE BY

Broadway Machinery Co., . . . 238 Broadway, Cincinnati, Ohio.

LATHES.

14 in. x 6 ft., Sebastian, hol. spindle.	38 in. x 14 ft., Fifield, comp. rest.
18 in. x 8 ft., Mueller, hol. spindle.	42 in., Steptoe, blocks to raise to 48 in.
18 in. x 8 ft., Lodge & Barker.	Screw mach., Cleveland, automatic.

IRON PLANERS.

25x25 in. x 6 ft., Pond.	36x36 in. x 12 ft., Gleason.
--------------------------	------------------------------

MISCELLANEOUS.

Air compressor, dbl. cyl., 10x14 in.	Pipe machines, $\frac{1}{4}$ to 2 in. & $3\frac{1}{2}$ to 8 in.
Drill presses, 11 in., sensitive, to 4 ft. radial.	Shaper, 36 in., Lodge & Davis.
Forges; vises; anvils, 90 to 600 lbs.	Steam engines, boilers and air compressors.
Gas and gasoline engines, 2 to 75 h. p.	Steam hoist, bridgebuilders', 4 spool.

FOR SALE BY

A. D. White Machinery Co., . . . 19-23 S. Jefferson St., Chicago.

LATHES.

10 in. x 5 ft., Star, hol. spdl., chuck.	20 in. x 10 ft., P. & W., c. r., solid sp.
16 in. x 6 ft., Bradford, cp. rest, chuck.	18 in. x 10 ft., Putnam, pl. r., solid sp.
20 in. x 10 ft., Rahn-Carpenter, chuck.	36 in. x 28 ft., Putnam, cp. r., trip. gd.

SHAPERS AND PLANERS.

24 in. Cincinnati shaper.	30x30 in. x 9 ft. Sellers planer, 1 hd.
25 in. Steptoe shaper, back geared.	36x30 in. x 9 ft. N. Y. S. E. Co., 1 hd.
27x27 in. x 8 ft., Pond planer, 1 hd.	36x36 in. x 9 ft. Aldrich planer, 1 hd.

PRESSES.

No. 18 Bliss, open back, inclinable.	No. 3 R. & K., dbl. ck., straight side.
No. 19 Bliss, open back, inclinable.	No. 40 Swain, straight side.
No. 2 R. & K., o. b., incl., dbl. crank.	Bliss, double crank, straight side.

FOR SALE BY

W. H. Welch, . . . 204 St. Clair Ave., N. E., Cleveland, O.

DRILLS.

4 ft., Gang, radial.	28 in., upright (2).
24 in., upright (3).	32 in., upright (2).

LATHES.

14 in. x 6 ft. lathe.	28 in. x 14 ft. lathe.
18 in. x 8 ft. lathe.	40 in. x 16 ft. lathe.

PLANERS.

16x16 in. x 36 in. planer.	35x35 in. x 8 ft. planer.
24x24 in. x 8 ft. planer.	48x48 in. x 20 ft. planer.

MISCELLANEOUS.

Metal saw, No. 5 Cochrane-Bly.	Milling machines, plain (8).
Metal saw, No. 12 Higley.	Shaper, 16 in.

SECOND-HAND MACHINERY

FOR SALE BY

J. J. McCabe,

14 Dey St., New York City.

LATHES.

15 in. x 6 ft., Young.
16 in. x 8 ft., Cincinnati, geared hd.
18 in. x 8 ft., New Haven.
20 in. x 10 ft., Putnam.
22 in. x 12 ft., Davis, heavy.
24 in. x 12 ft., Rahn.
26 in. x 14 ft., Schumacher-B., chuck.
26 in. x 18 ft., Perkins, heavy.
28 in. x 14 ft., Schumacher & Boye,
quick change.
28 in. x 16 ft., Fay & Scott, heavy.

42 in. x 14 ft., Schumacher & Boye,
quick change.
44 in. x 14 ft., Harrington, gap, ex-
tension bed.
46 in., blocked 52 in. x 18 ft., Lowell.
52 in. x 18 ft., Fifield, triple geared.
52 in. x 24 ft., Putnam, triple geared.
60 in. x 24 ft., Standard, triple geared.
79 in., Niles, drive wheel, dbl. head.
86 in. x 13 ft., Bement, triple geared.
Small sizes, standard makes.

PLANERS.

16x16 in. x 3 ft., Whitcomb, 1 hd.
20x20 in. x 4 ft., Stover, 1 hd.
24x24 in. x 5 ft., Wheeler, 1 hd.
24x24 in. x 6 ft., Gray, 1 hd.
26x26 in. x 6 ft., Gray, 1 hd.
27x27 in. x 6 ft., Ohio, 1 hd.
27x27 in. x 7 ft., Whitcomb, 1 hd.
30x30 in. x 8 ft., Putnam, 1 hd.
30x30 in. x 10 ft., Niles, 2 hds.

30x30 in. x 12 ft., Newark, 1 hd.
36x36 in. x 10 ft., Bement, 1 hd.
42x34 in. x 8 ft., Pease, 1 hd.
42x42 in. x 12 ft., Whitcomb, 2 hds.
42x42 in. x 18 ft., Niles, 2 hds.
48x48 in. x 16 ft., Gray, 3 hds.
48x18 in. x 18 ft., Gray, spiral, 4 hds.,
latest standard pattern.
52x52 in. x 16 ft., Bement, 2 hds.

SHAPERS.

12 in., crank, latest pattern.
16 in., Hendey, friction.
18 in., Prentiss, crank.

24 in., Smith & Mills, crank.
26 in., triple geared.

TURRET LATHES AND SCREW MACHINES.

2½ in., Pratt & W., wire feed screw
machine, with new turret.
12 in. x 4 ft., Warner & Swasey, plain
turret lathe.

16 in. x 4 ft., Warner & Swasey, plain
turret lathe, with chuck.
20 in. x 7 ft., Bullard, comb. stud and
chucking lathe, 2½ in. hole.

DRILLS.

3 ft., arm radial, Baush.
4 ft., arm radial, Gang Co., tapping
attachment, latest pattern.

3 spindle, sensitive, Slate Co.
24 in., upright, back gears, automatic
feed.

GRINDERS.

No. 3 Brown & Sharpe, univ., with
wheels and pump, cap. 12x40 in.
Cincinnati cutter and tool grinder,
universal.

Springfield car wheel grinder, double
head, for grinding both wheels on
axle at the same time.

RAILROAD TOOLS.

Car wheel grinder, Springfield, d. hd.
Driving wheel lathe, 79 in., Niles.

Wheel press, hydraulic, 40 in., Sellers
& Co., 130 tons capacity.

BOILER-SHOP OUTFIT.

Riveting outfit, hyd., 8 ft., B.-M. Co.
accumulator, pump, crane, over-
head hoist, etc., cap. 1½ in. rivets.
Punch and shear, single, 15 in. gap,
capacity, ¼ in. through ¾ in.

Punch and shear, single, 30 in. gap,
capacity, 1½ in. through 1 in.
Punch and shear, single, 50 in. gap,
capacity, 2 in. through 1 in.

MILLING MACHINES.

20 in., Cincinnati, univ., table feed.
24 in., plain feed, latest pattern.
24 in., Oesterlein, univ., table feed.

30 in., universal, table feed, double
back gears, all automatic feeds.

GEAR CUTTERS.

18 in., Brown & Sharpe, full auto-
matic, spur and bevel, 18x8 in. oil
pump, heavy pattern.

22 in., G. & E., full au., latest pattern.
36 in., Gould & E., full automatic,
spur and bevel.

MISCELLANEOUS.

Hammer, 350 lb., Beaudry, upr., pwr.
Slotter, Lowell, 11 in. stroke.

Pulley and wheel borer and hub
facer, 62 in. up, Niles.

After May 1st—Offices: Hudson Terminal Building, New York City. Show-
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Hudson Tunnel, direct from office building.

SECOND-HAND MACHINERY

FOR SALE BY

Wickes Brothers, . . . West & Cedar Sts., New York City.

PLANERS.	
28x36 in. x 10 ft., Powell.	42x35 in. x 8 ft., Bement.
35x36 in. x 10 ft., Bement-Miles.	42x40 in. x 9 ft., Bement, dbl. head.
76x30 in. x 12 ft., Powell.	48x48 in. x 21 ft., Putnam.
42x35 in. x 7 ft., Bement, dbl. head.	
LATHES.	
26 in., pulley lathe.	38 in. x 12 ft., engine lathe.
38 in. x 25 ft., Perkins.	69 in., Bement, drive wheel lathe.
MISCELLANEOUS.	
Boring machine, Niles, horizontal,	Hammer, 600 lb., board drop.
2 spindle.	Millers, Lincoln (7).
Boring mill, Beaman-Smith, duplex.	Profiling machine, No. 1 Garvin, dbl.
Hammer, 35 lb., Williams & White.	spindle.

FOR SALE BY

The Randle Machinery Co., . . . 1739 Powers St., Cincinnati, O.

LATHES.	
19 in. x 8 ft., Lodge-Barker, compound rest, solid spindle.	
24 in. x 12 ft., Flather, raised to 30 in., compound rest, hollow spindle.	
26 in. x 12 ft., Blaisdell, compound rest, hollow spindle.	
60 in., Stevens, pulley lathe.	
PLANERS.	
32x32 in. x 10 ft., New Haven, single head.	
40x40 in. x 11 ft., Aldrich & Calvert, single head.	
SHAPERS.	
20 in., Lodge & Davis Co., geared.	
MILLERS.	
Duplex brass miller.	
ENGINES.	
Corliss, automatic and throttling, all sizes.	
BOILERS.	
Tubular, fire box and vertical, all sizes.	
MISCELLANEOUS.	
Pumps, heaters, tanks, wagon scales, saw mill machinery, etc.	
We are sole manufacturers of the celebrated "Leader" Injectors and Ejectors.	

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If you are in search of machinery for working wood, write to the publisher for a copy of **The Machinery List**, containing the advertisements of all the leading manufacturers of wood-working tools, as well as complete lists of second-hand machinery in market. Mailed **free**, on receipt of request, to anybody, anywhere on earth.

A. H. Hitchcock, : : : : Publisher
626-627 Monadnock Block, CHICAGO, ILL.

**FOR SALE BY
HILL, CLARKE & CO. OF CHICAGO
SECOND-HAND TOOLS.**

LATHES.

10x4, Chicago, speed.....	\$ 35	14x6, Reed, rise and fall rest	
12x5, Chicago, speed.....	50	and taper.....	\$290
12x5, Reed, plain rest.....	75	18x8, LeBlond, tur. on car....	475
14x6, Ames.....	50	22x10, American, c. r.....	550
14x6, Lodge & S., q. c. g.....	250	28x11, Draper, taper.....	950

SCREW MACHINES.

8 in., Clevel'd, plain, auto..	\$ 200	Garvin, double turret.....	\$ 375
8 in., Cleveland, auto.....	250	No. 3 Pratt & Whitney.....	350
1 in., Pearson.....	250	No. 4 Bardons & Oliver....	450
1 in., Cleveland, auto.....	600	No. 5 Bardons & Oliver....	1100
24 in., Cleveland, auto.....	1250	12x4, P. & W., chasing lathe..	100
10 in., Davis & Egan.....	150	24 in., Pearson, form. mach..	300
15 in., Amer., Fox lathe....	175	24x26 in., Foster, ring turret..	600
16 in., Davis & Egan.....	350	No. 12 Pearson, pl. monitor..	175
16 in., Garvin, turret.....	200	2x24 in., Jones & L., flat tur..	800

MILLERS AND GEAR CUTTERS.

Miller, No. 1 P. & W., hand..	\$125	Miller, No. 16 Kemps'th, pl....	\$775
Miller, No. 2 Kemps'th, pl..	235	Gear cutter, 30 in., G. & E....	450

WANTED

*Good Second-Hand Iron Working Machinery
Write us what you have*

HILL, CLARKE & CO. OF CHICAGO

THE LODGE & SHIPLEY MACHINE TOOL CO.

Offer at a bargain the following tools, some of
which are NOW IN USE in their own shops:

LATHES.

Two 20 in. x 8 ft., Lodge & S.	One 30 in. x 10 ft., Lodge & S.
One 20 in. x 10 ft., Lodge & S.	One No. 1 high speed lathe, 10 ft., Lodge & Shipley.
One 22 in. x 10 ft., Lodge & S.	No. 3 rapid reduction, Lodge & Shipley.
Two 24 in. x 10 ft., Lodge & S.	
One 24 in. x 12 ft., Lodge & S.	

TURRET CHUCKING LATHES.

One 24 in. x 7 ft., Lodge & S.	One 24 in. x 10 ft., Lodge & S.
One 24 in. x 8 ft., Lodge & S.	One 44 in. x 9 ft., Lodge & Davis.

DRILLS.

One Andrews multiple drill, 11 spindle.

GEAR CUTTERS.

One No. 4 Brown & Sharpe, automatic spur gear.

GRINDERS.

One No. 2 Sellers, universal.

PLANERS.

One 36x36 in. x 24 ft., three head, Sellers.
One 36x36 in. x 24 ft., four head, Sellers.
One 36x36 in. x 24 ft., double head, Pond.

**The Lodge & Shipley Machine Tool Co.
CINCINNATI, O., U. S. A.**

Unit Benches



THE "New Britain" system of benching provides a construction whereby every installation is a series of units, any one or number of which may be removed or changed to other positions without the slightest loss.

Even though you have no benches to construct now, get our booklet and be posted

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